QUESTION 3 (6 marks)

Figure 1 shows rhombus OPQR with $\overrightarrow{OP} = p$ and $\overrightarrow{OR} = r$.

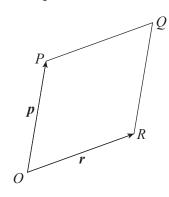


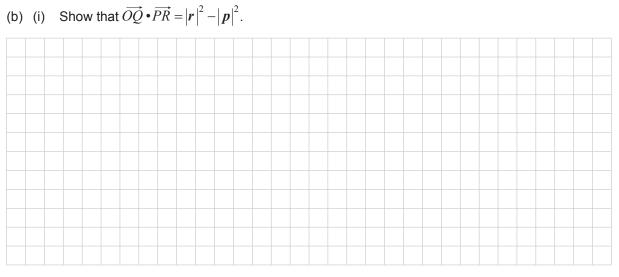
Figure 1

(a) (i) Find \overrightarrow{OQ} in terms of p and r.

(1 mark)

(ii) Find \overrightarrow{PR} in terms of p and r.

(1 mark)



(2 marks)

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(ii) Hence prove that the diagonals of the rhombus OPQR are perpendicular, giving reasons.

(2 marks)